SUPPLEMENT.

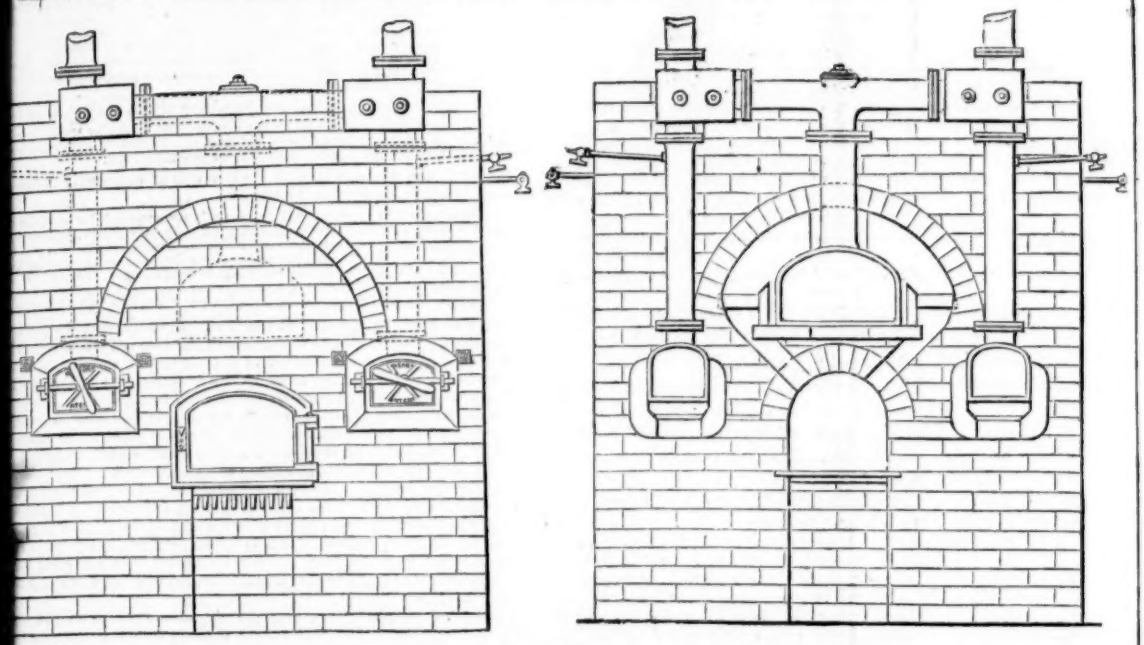
The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1081.—Vol. XXVI.] LONDON, SATURDAY, MAY 10, 1856. [GRATIS.

HANSOR'S ILLUMINATING GAS FROM OLEAGINOUS SUBSTANCES.



r engraving represents the front elevation and longitudinal section n apparatus for generating illuminating gas from vegetable and olea- us substances, which has been invented and patented by Mr. James sor, of Wandsworth-road, Vauxhall.

he great merit of this invention is attested by several eminent nists and engineers, and much interest is created for the success of blic company which has been formed for the purpose of its full and ral development, both in Great Britain and in foreign countries, re oleaginous substances are cheap and abundant.

r. Hansor's invention is evidently calculated to supply a desideratum h has long been required, both in England and abroad.

he method of generating oil-gas during the last half-century has rly been erroneous, and hence, though many attempts have been made troduce that mode of artificial lighting to the public favour, all such mpts have been unsuccessful.

nder the old system, there was no reliable mode of ascertaining, or of ulating, the temperature of the retorts, so that sometimes the heat was ow to insure the destructive distillation of the oily matters employed, then soft carbon was deposited in the retorts, and much condensible our passed off; while at other times the heat was much too high, ing decomposition of the gas, and deposition of hard carbon in the rts: for these reasons, the oily substances seldom yielded more than their carbon for use in illuminating, and while the frequent destruction of the retorts was felt to be a serious evil, the process was always uncertain and inefficient, even in the hands of skilled operators.

Mr. Hansor has succeeded, by a method entirely new, in obtaining an exceedingly brilliant and beautiful light, by a process which, while it is so simple that it may be, and is, conducted by an unskilled and uneducated labourer, removes all the difficulties hitherto experienced in generating oil gas, and effectually utilises all the luminiferous elements of the material which he employs, and which we understand is the subject of another patent.

The process consists of vapourising the material in the small retorts at a heat just sufficient for that purpose, and then of converting into gas, at a somewhat higher temperature, the vapour, which flows in hot volumes from the small retorts into and through the large one.

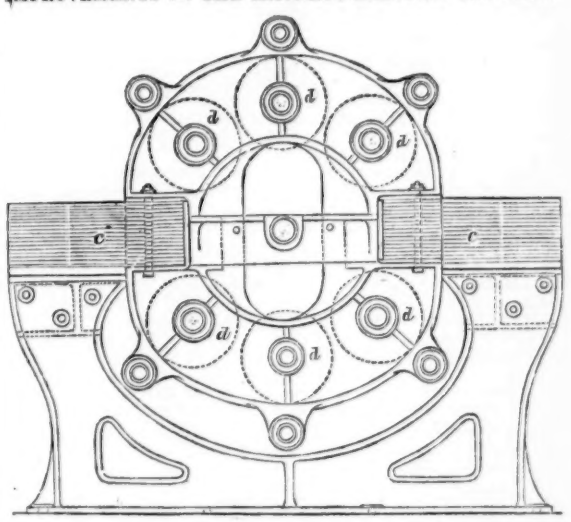
The flues are so proportioned that the proper heat of each retort is raised and equally sustained at the same time.

Each retort has its own flue, and each flue is regulated by a separate damper, so that the temperature of each retort may be rendered higher or lower at pleasure.

By means of the test-pipes and stop-cocks, shown in our engraving, the operator knows exactly when vapour is generated in the small retorts, and gas in the large one; and thus, by attention to two or three simple directions, he can conduct the process with great efficiency, and with the most satisfactory and uniform results.

We understand the inventor evinces great pleasure in explaining the full details of this invention to scientific and other gentlemen who feel interested in his discovery.

IMPROVEMENTS IN THE MAGNETO-ELECTRIC BATTERY.



Mr. S. Hjorth, of Copenhagen, whose experiments on the electro-magnetic engine we have repeatedly referred to during the past few years, has recently been engaged in developing the power of a new battery, which appears to be superior to any other yet produced by him. From a report forwarded us, we understand the armatures move with as much ease as under the old arrangement, although the magnetic force was increased from 600 lbs. to 2300 lbs.; that the speed of the armatures required to keep up a steady deflection of the galvanometer was from 70 to 95 revolutions per minute; that the power required to move the armature is equal to a 4 lbs. weight attached to a cord over a pulley, and wound round the periphery of a disc 30 in. in diameter. This battery has worked a small electro-magnetic engine of 6 in. stroke, at the rate of 70 revolutions per minute; it has produced gas by decomposition of water, at the rate of 8 cubic in. per minute, gravity 1100, by 93 revolutions of the armature per minute. While under the previous arrangement the battery produced 3 cubic inches of gas per minute, with 600 lbs. magnetic force, and a speed of 180 revolutions per minute, the one under notice produces 15 cubic inches, with about the same force, and 186 revolutions per minute, being five times the quantity, while the magnetic force increased four times. The deflection of a 5-inch vertical galvanometer was $3\frac{3}{4}^{\circ}$ of a quadrant, divided into 15°, or $22\frac{1}{2}^{\circ}$ of a circle, while it is 21° when the battery is so arranged as to combine quantity with intensity, the latter being as 12 of Smee's arrangement for measuring the latter. Its power of depositing metals from their solutions is very great, for while under the old system it required 1-horse power to give the armatures a speed of from 600 to 750 revolutions per minute to deposit 4 ozs. of silver or 1 oz. of copper per hour, Mr. Hjorth's battery effects the same by hand power, producing from 90 to 95 revolutions of the armatures per minute. The invention generally consists in a series of armatures in a wheel, revolving with a slow motion, and brought in succession between the poles of a horse-shoe permanent magnet, as seen in the above diagram, combining a *maximum* quantity of metal in a *minimum* of space, surrounded with spiral rings, or coils of copper wire, within cylinders, also coiled with wires. The arrangement is peculiar in several points, is found highly successful in operation, and we believe has proved much more effective in its results than any other magneto-electric battery yet produced. All magneto-electric batteries have hitherto produced only intermittent currents, while that of Mr. Hjorth is constant and continuous. We believe this is the first occasion in which an electro-magnetic engine has been worked by the dry battery.

Double Slide Expansion Valve for Marine Engines.—Mr. F. Wymer, Newcastle-on-Tyne, superintending engineer of the Tyne and Continental m Navigation Company, in consequence of having found the want of an efficient nsive motion for marine engines, admitting of being readily thrown out of gear aried, has invented a double slide valve, which consists of two slides, one of which orked by a pair of eccentrics in the ordinary manner; on the back of this is the nd or cut off slide, through which the steam has to pass the first slide. The cut ide is worked by an expansion link, one end of which is held stationary by a con- ric ring on the crank axle, and the other is connected to a third eccentric. By means, when the rod of the cut off slide is shifted to the stationary end of the ex- sion link, the cut off slide does not act, and the engines work at their full power; when the cut off slide is in gear with the other end of the expansion link, it cuts he steam from the first slide at an early point in the stroke, and by adjusting it fferent positions in the expansion link, the degree of the expansion of the steam gulated to any extent. The combined action of the two slides gives a more pt cutting off with less withdrawing of the steam than in the ordinary single valve, and prevents the exhaust of the steam being interfered with. The double valves have been applied to the engines of the screw steamer *Lord Raglan*, and worked successfully for a period of nine months, during which the vessel has 14,000 miles.

Improved Packing for the Slide Valves of Marine Engines.—R. Waddell, of Liverpool, has invented an Improved Packing for the Slide Valves Marine Engines. In the Cunard vessels, and generally in large English steamers, D slide valve is used for supplying the steam to the cylinders; the interior of the e between the ports of the cylinder communicates with the boiler, and the steam pes to the condenser beyond the end of the valve. The valve is ordinarily packed a single strip of packing at the back opposite each port of the cylinder, to pre- the steam blowing through into the condenser; but with this arrangement, the pressure between the valve and the port faces, on which it slides, varies from ing to several tons in the large engines at different parts of the stroke. The it is an unequal wear of the two edges of the port, which have been so much worn of level in a single voyage across the Atlantic and back, as to cause serious leakage eam into the condenser, and much trouble in the repairs. The new plan of pack- consists in employing two strips, instead of a single strip, one opposite to each of the port, a free communication being maintained between the port and the e between the packings. By this means, the valve is perfectly balanced, and pressure between the rubbing faces is reduced to merely the amount required to ent the steam blowing through, causing a great reduction in the wear of faces. new mode of packing is applicable also to single slide valves, and has been tried more than a year in the *Columbian*, by Messrs. Elder and Co., with complete success.

Foundry Hoist and Cupola.—Mr. John Fernie, of Derby, has in- ed a new hoist, which has been working successfully for eighteen months at the annis Foundry, Derby; it consists of a steam cylinder, fitted with a piston, and ater hoist cylinder, the ram of which carries on its top the platform on which are ed the materials to be raised. The steam cylinder is filled with water below the n, and the steam being admitted above, the water is forced through a pipe into oist cylinder, thus raising the platform. The hoist raises 9 cwts. at a time to the ht of 10 ft. and is employed to fill the cupola of the foundry. The cupola is the ntion of Mr. Ireland, of Manchester, and has been found to effect an important ng in the quantity of fuel required, only 2½ cwts. of coke being used per ton of The saving is principally caused by the superior mode of charging, which is systematic and more carefully managed than in the ordinary cupola; and the ral construction of the cupola is also improved. The cupola is blown by a Lloyd's less fan, which is formed of curved arms with sheet-iron blades, having sheet- discs fastened on the sides of the blades, thus forming a case, or impeller, open e circumference, by the revolution of which the blast is produced. The discs nt the reaction of the air on the blades, rendering the fan noiseless.

A Hot-Air Locomotive Engine, constructed on an imposing scale, at the Novelty Works, New York, has attracted considerable attention. It is a large-sized handsomely-finished affair, with two pairs of six-feet driving wheels, adapted to the broad 6-feet guage. It has been tried on the Erie Railway, and the result was a failure so far. The engine is driven by air and water combined, the two elements being mingled together, and worked off in the usual manner by the aid of cylinders and pistons. The steam is generated in a stout chamber, immediately over the fire, the water being kept up in the usual manner by a force pump connected to the machinery. The air is heated by direct passage through the fire; being in fact the same air which usually enters through the grate to support combustion, and usually escapes highly heated through the chimney.

Smelting Iron Ores.—Mr. Isaac Rogers, of the State of New York, has specified an invention for "Improvements in the mode of treating iron ores." This invention consists in the use of a revolving deoxidising cylinder, heated in a reverberatory furnace, into which cylinder the ore, pulverised and mixed with charcoal, is introduced through a hollow journal at one end of the cylinder. As the cylinder revolves, the ore and charcoal are passed gradually by means of a helical screw from one end of the cylinder to the other; and the ore, after having been thus mingled intimately with the charcoal at a high temperature, is dropped into the smelting furnace. The object proposed to be attained by this contrivance is to deoxidise the ore, and to render it carbonaceous, by which means it is more readily melted. The apparatus is of too complicated a character for adoption on a large scale, even assuming it to produce the good results which the patentee asserts; and we conceive the invention will be found only fitted for laboratory experiments.

Railway Wheels.—Mr. Samuel Ludbrook, of Mile End, manufacturer, has taken out a patent for railway wheels made with wooden peripheries. The same principle has frequently been attempted to be applied; and whether this application be essentially different from others, may be a question for the decision of lawyers, should the invention prove lucrative. In Mr. Ludbrook's specification it is stated that the invention consists in forming the outside edge of railway wheels of wood, forced and pressed into and between suitable holding plates and chambers, in such manner as to form a very hard and compact surface, with the grain of the wood so placed as to be at right angles with the surface of the rail at the point where the edge of the wheel comes in contact with it. The body of the wheel consists of a boss or nave, cast with radial arms, the spaces between which are filled up with hard wood, forced in. A circular side plate of iron is afterwards placed on each side, and the plates bolted firmly together; one of the side plates being of larger diameter than the other, to form the flange of the wheel. Wedges of hard wood are then driven into the wooden part of the wheel, and afterwards turned down to a smooth surface. The hold that the wedges have on the wheel depends altogether on the pressure of the wood into which they are driven, consequently it is to be feared that the jarring of the wheels on the rails in dry weather would loosen the wedges, and that they would be thrown out by what is termed "centrifugal" action.

Manufacture of Fuel.—Messrs. Watson and Oliver, the joint patentees of this invention for the manufacture of fuel, profess to produce a superior kind of coke by mixing with the coal to be converted into coke a large quantity of ground coke and coal mixed together. In what manner the coke thus formed becomes superior to coke of the ordinary kind is not stated in the specification; but admitting the quality of the new kind of fuel to be only equal to common coke, there would be a great economical advantage in the process, as it would turn to profitable account the small coal and small coke that are otherwise almost useless. The principal advantage of manufactured fuels is the conglomeration of the small coals, which cannot be burnt in furnaces, into lumps. When that is done with the addition of a tarry cement, the cost of manufacture raises the price of the fuel higher than that of good "knobly" coal; but the process of Messrs. Watson and Oliver produces a similar effect without any additional material, consequently the fuel so made can be supplied cheaper than ordinary coke.—*Civil Engineer and Architects' Journal.*

New Motive Power.—We have inspected the model of Mr. Turner's self-acting rotary lever machine, from which the inventor anticipates obtaining perpetual motion sufficient to drive light machinery, and in which it is to be hoped he may not be disappointed. The power is stated to be derived from a wheel, so arranged that the weight is always greater on that part of the periphery which is in its downward course than on that which is rising. This wheel acts upon a second, having on its periphery a series of angular levers, which are one by one liberated to give a preponderance to the falling side, releasing the levers thereon, communicating the motion to the machinery, and at the same time, by means of cranks, cogs, or other suitable contrivances, to a third wheel, situate on the opposite side of the first, or propelling wheel, in order to keep such wheel in motion. Provided the machine can be made to act in the manner the inventor wishes, there can be no doubt it will be generally adopted. Whilst the above appears rather more complicated than a chronometer, and of far less utility, we must not express so unfavourable an opinion of a second, and more simple contrivance, by the same gentleman, which certainly appears calculated to raise a given weight without applying more power than that ordinarily employed. This machine consists of two wheels of equal size; at the back of one is fixed a cog wheel of the same diameter, and at the back of the other a cog wheel of one-half the diameter, working together. The first, or propelling wheel, is that furnished with the small cog, and on its periphery is to be placed a series of pins, with anti-friction wheels; on the second is a series of angular levers—that is to say, small pieces of an angular form, of which the junction is the fulcrum; the arm projecting from the wheel is loaded at the extremity, whilst that which is within the circumference of the wheel acts upon the pins in the propelling wheel, and gives motion thereto. The levers are in this machine, as in the former, one by one liberated, and fall; this is to give the motion to the machine. The power of the machine is such that the weight at the extremity of the lever, acting upon the pin of the propelling wheel, will, although the weight at the extremity of the lever on the opposite side of the second wheel weighs exactly the same, raise a body placed on the periphery of the second wheel equal to seven-eighths of its own weight; or, when the lever acting upon the propelling wheel is placed in such a position that the entire weight of the loaded extremity shall act upon the pin on the propelling wheel, there is sufficient power to balance a body double the weight of such loaded extremity of lever. The inventor states that he considers this machine his masterpiece, and looks forward to very

favourable results from it. The above being the facts of the case, it will be observed that when the weight is applied in the position first described, its power is not nearly equal to its power when applied in the second position; this, no doubt, arises from the propelling wheel being placed too high with regard to the second wheel, as in our opinion in both instances the power is obtained, not from the arrangement of the levers, but from the cog on the propelling wheel being one-half the size of that on the second wheel (thus gaining double power by losing half the speed), and the power being applied at the periphery of the propelling wheel. The inventor states that the discovery has cost him years of labour; we shall, therefore, be ready to afford him every facility for proving that his conclusions are correct; at the same time, from what we have at present seen, we can only consider the invention as another imaginary scheme for obtaining the long-sought perpetual motion.

Original Correspondence.

TO THE COAL MINERS OF ENGLAND—INSPECTORS OF COAL MINES.

FELLOW-WORKMEN,—It is a truth in political as well as in ethical science, against which there is no appeal, that one false step leads inevitably to another, until the full measure of iniquity is complete, when destruction ensues. Every empire and kingdom, from the earliest records of antiquity to the latest periods of civilisation, afford striking examples of this moral and political truth; and it would be idle to deny its importance and efficacy as a caustic restorative to a state of national convalescence, so long as political men will abuse the power entrusted by a confiding people to their charge, in using it to further their own selfish purposes, and not the advancement of the public weal. There is added another melancholy confirmation of this truth in the case of the recent appointments of examiners and examined, for the important office of Government Inspectors of Coal Mines. In the *Mining Journal* of Feb. 9 and 23, there are letters from Mr. Smyth, Mr. Hutchins, and Mr. Wood, the object of which is to meet the grave allegations of "jobbing" with Government appointments which have been preferred against them, no doubt justly, by the leading articles of this Journal.

Have these letters convinced the miners that the examiners, Mr. Smyth and Mr. Wood, were selected for their great acquirements and profound abilities, or for their rectitude of purpose in discharging the onerous duties imposed upon them? No, is the thrilling response of the mining community, as well as the public, whose sense of justice is not blunted and warped by the potent influence of interest. With respect to the letter of Mr. Hutchins, in which he feelingly complains of having been assailed in an unwarrantable manner by me, I am bound to believe what he states, —"I deny that I have used any influence, either directly or indirectly, in favour of any gentleman who has been appointed or been a candidate for that office." Although courtesy compels me to believe the honourable gentleman, still the question remains unanswered—Did not Mr. Hutchins strongly recommend that Government inspectors should be selected from the distinguished "ten or seven years' managers," and thereby ignored the intelligence of 200,000 colliers? *Ab uno disce omnes.* So much for the sincerity of Mr. Hutchins, whose guiding star appears to be *aut Cæsar aut nullus*—either Cæsar or nobody.

Let us now examine Mr. Smyth's reply to the very important charges brought against him, as one of the responsible examiners. *In limine*, I have no wish to speak in disparaging terms of the lofty attainments of those gentlemen to whom Mr. Smyth refers. He no doubt speaks feelingly, and, therefore, more suspiciously; but when he exultingly proclaims, with a dogmatism by no means becoming his position as a man of science, that the descriptive powers of Messrs. Alexander and Hedley, the elaborate, and, I suppose, profound researches on the principles of ventilation by Mr. Atkinson, are of that importance and magnitude to give those gentlemen a European reputation, and render them fit subjects for public patronage and reward, then I conceive it is my duty to teach the learned examiner that "those who keep pace with the advance of this branch of knowledge" do not coincide with him in his unmeasured eulogy and fulsome encomiums on the productions of gentlemen whose education, in common with thousands, is respectable, but whose powers for original research and investigation, in the sense known to men of science, are only very limited indeed. Nothing can be further from my purpose than to undervalue the real excellencies of these gentlemen, and I cannot conceive that they themselves can approve of Mr. Smyth placing them on the same pedestal of fame with a Davy, a Dalton, and a Faraday. What does the learned examiner mean to imply by "elaborate researches on the principles of ventilation?"

When the pressure of a continuous fluid, elastic or non-elastic, is greater at one point than it is at another motion will ensue; this is the only principle which ventilation can boast of, and it has been known to the colliers for ages. Does he mean to imply that Mr. Atkinson can predict or estimate the amount of motion of a moving fluid, and thereby calculate the velocity of the current which supplies the wants of the mine, even when the cause of motion is fully established? If so, then I have to appeal, with a full assurance of meeting with a favourable response, to the present advanced state of the hydrodynamical sciences to show that the learned examiner has not pursued his studies, in these matters at least, beyond the dangerous point. "A little learning is a dangerous thing; drink deep, or taste not, the Pyerian spring." Now, has Mr. Atkinson added anything new to the great laws of Boyle and Dalton, which regulate the pressure, density, and temperature of elastic fluids? If he has, the mining and the scientific public will be anxious to know of what it consists.

It remains for me to thank Mr. Smyth for his effective public testimony to a great fact, which I have laboured long to enforce on the minds of the public—that "scientific viewer" is a misnomer. I repeat it advisedly, that a scientific viewer is a great public fraud, even when it is applied to such men as Mr. N. Wood; and I do hope this declaration, and the following testimony of Mr. Smyth, will stimulate the colliery viewers not only to increase their present smattering of science, but to foster and encourage its manifestations in the thousands of colliers around them. Mr. Smyth triumphantly asserts that which not only condemns his coadjutor, but consigns the whole of the colliery viewers to the just contempt and ridicule of all sensible men. "It is worthy of note that several of the newly-appointed inspectors are among the very few coal viewers who are distinguished in the literature of the science and practice of mining." Here is a bomb hurled with wicked intent and malice aforethought from the brilliant ramparts of the collegiate fortress into the peaceful camp occupied by practical men. Will the sable carbonites respond to this aggressive missile? If the thought prevailed amongst really practical men that Mr. Smyth possessed mental calibre and practical experience to enforce upon the minds of others an independent opinion, then such a missile as the one here referred to would be highly dangerous; but, alas! it is to be feared that he is not in possession of any such powerful weapons. If the field of capables be so circumscribed as Mr. Smyth states it to be, then I have to ask feelingly, why not extend it beyond the confined limits of scientific viewers and colliery managers? Why not allow pressing necessity to fulfil its high vocation, by extending its gentle but effective hand to the coal hewer as well as the coal viewer? Surely, amongst 200,000 men there will be found, scattered no doubt, some of Nature's nobility on the shoulders of whom the inspiring mantle has been negligently but effectively thrown. If "the responsible management of a colliery was a guarantee for the kind of experience required," then, "in the names of all the gods at once," what can be the use of examiners? If the examiners are appointed to ascertain the fitness and capabilities of candidates, what have they to do with experience? Knowledge and mental vigour, no matter how obtained, should claim their entire consideration. In the epistle of the northern chieftain, the wily tactician is more apparent, and the effects of words better calculated, than they are in the letter of his coadjutor, Mr. Smyth. After a good deal of flourishing of trumpets, Mr. Wood finally adopts the principle, well known to every schoolboy—"two negatives make a positive." It appears that "jobbing" is by no means palatable to the venerable chief. His own conscience, however, contains the antidote to expel the insidious poison of "jobbing," and is also the repository of his own motives, which I hope, when truth is unfettered, will not rise and condemn him.

The narrative between Mr. Wood the examiner, and Mr. Evans the examined, is simple, and readily told. Mr. Wood, living at Hetton, Durham, undertakes the management of the Dowlais Works, Wales, the resident manager of which is the fortunate Mr. Thomas Evans. It does not require an eagle's penetration to see that, placed in such circumstances, it is quite possible for Mr. Evans to render most invaluable services to Mr. Wood in the discharge of his duty, without possessing any great share of constructive ability or mental energy. And certainly Mr. Wood would be deemed one of the most ungrateful of mankind if he had neglected the first opportunity of requiting the kindness of Mr. Evans. Still, Mr. Wood's obtuseness will not allow him to perceive that such a connection between the examiner and the examined entirely unfits him to examine Mr Evans, especially when public competition is at issue. I will not drag Mr. Evans, further before the public than to ask, if he were so competent to carry on the underground operations at the Dowlais Works as his friend Mr. Wood would fain have us believe, then why were the labours and experience of Mr. Wood required?

It would puzzle any one to comprehend the principles which regulated the proceedings of the examiners, except private advancement and questionable motives. It is admitted by all, that different coal districts require an inspector having knowledge and experience of each district which he is appointed to inspect; there can be no doubt of the propriety and reasonableness of such a proposition. Now, for the anomaly which presents itself to every candid mind: will it be believed when I state that Mr. Wood, the coal viewer of the North, is appointed by Sir George Grey to examine and report the fitness and capabilities of candidates to occupy the important position of Government Inspectors of coal mines in other mining districts, with the requirements of which he cannot have the slightest acquaintance? For instance, what can Mr. Wood know about the advantages and the disadvantages of "long work" or "benk work," as it is sometimes called, and "stall work?" A man who has been wedded from infancy to the "pillar and stall work" of Newcastle, cannot, I apprehend, appropriate to himself the distinguished privilege of adjudicating the claims and qualifications of candidates beyond the sphere of his own personal experience. It is astonishing to me through what medium the Right Hon. the Home Secretary looks at distant objects, in order to see them in such distorted forms, and by such a powerful chromatic aberration. A child might comprehend the inaptitude of the means to the end.

In conclusion, my fellow-workmen, allow me to suggest what I conceive to be of the very highest importance, if you desire to succeed in removing the oppression under which you labour, and increase the value of your services to your country, your wives and families. Wait not till the bickerings and wranglings of priests and politicians subside, with respect to the part each shall respectively take in the great work of education. Commence at once in right good earnest to educate yourselves, and I will venture to predict there is nothing in science, literature, or ethics, you cannot, by your own self-moved industry attain, with a better practical result, than you could by the questionable assistance of the Church and State. I know, from experience, that there is no possible means given among men, except intelligence and education, by which a hard bare stint can be made soft, a board easy to cut, and the rate of 5s. per day maintained, against the powerful incentives for coalowners to reduce it to 4s.

COAL MINER.

[A pressure on our space has caused some delay in the publication of this letter.]

THE WORKING OF MINES NOT THE CAUSE OF THE INCREASE OF POOR-RATES.—RATING OF MINES, &c.

SIR,—I am extremely well pleased to see this subject now being more duly and generally considered than when I addressed you about this time last year, for which thanks to your exertions. Your talented correspondent, Mr. Vernon Venables, has given us, in your Journal of the 19th inst., a letter in his usual lucid style. Such letters must command attention; his promised numbers I shall look forward to with a great deal of pleasure. Your West Cornwall correspondent, also, has for a long time been making some good remarks, and inviting attention: his comments on the mine club funds has called my attention. I think that when any mine is stopped, the balance of the club fund should be carefully made up, and handed over to a central committee, for the benefit of the miners and their families. He also alludes to the mine dues, and probable increased demands of the lords. He may be right in his conjecture. After so much experience of the governing classes as we have had the last few years, I very much fear that we have not sufficient reasons to be very confident that the landed gentry would not adopt some such narrow, selfish and suicidal policy. This thought opens up before me in strong array —the origin of the landholders' property in the soil; the people's rights; those rights destroyed, the cause of the necessity for the poor laws; the selfishness of the great landed classes; the curses and the bitter enmity this selfishness has engendered; the remedy, their duty to the people and the country; and the policy of their observing that duty.

With regard to the great landholders' property in the soil, we need not go into detail; many of their forefathers won their land by the sword, and, with the old Earl of Warwick, by the sword they mean to hold it. However questionable this mode of acquiring property may be considered in the present day, as appears from the general outery against Colonel Walker and other fillibusters, the fact cannot be controverted that such was the origin of many of the ancient inheritances of Great Britain, or rather England. Some had their lands conferred for services rendered the prince, others for no other service than a little flattery, or, perhaps, pandering to the corrupt indulgencies of a libertine king, &c. In fact, all sorts of imaginable and unimaginable services. At present, however, we have more particularly to consider the rights of the people, and those rights destroyed, which will lead us to the origin of the poor laws.

Whatever the origin of the landed proprietors' claims to the land, it is clear that from the Conquest down to the time of Henry VII., the people were considered as having certain rights to the soil. It was neither the policy of the prince, the barons, or the chief landed proprietors of the feudal times, to drive the people from the soil. And why? Not from the love they had for the people, but for the benefit they derived from them. Of what use was a kingdom in those days without people? or a baronial hall without plenty of good things, which could only be derived from cultivating the soil? The landed proprietors, too, were in the habit of quarrelling among themselves, and he who could raise the greatest number of able-bodied men on his estates, would be most likely to overpower his neighbour. Hence the people's privileges in connection with the soil were in many cases enlarged and extended.

In the *Quarterly Review*, July, 1829, the subject of the condition of the English peasantry is treated of fully. Speaking of the time referred to, from the Conquest down to Henry VII., the writer says:—

> The great body of the people was composed, first of persons who rented small farms, seldom exceeding 20 or 30 acres, and who paid their rent either in kind or in agricultural labour, and services performed on the demesne of the landlord. Secondly, of cottagers, each of whom had a small parcel of land attached to his dwelling, and the privilege of turning out a cow or pigs, a few sheep, &c., into the woods, common, or wastes of the manor. During the whole of this period the entire population of England derived its subsistence immediately from the land; the landowner from the produce of his demesne, cultivated partly by his domestics, but principally by the labour of the tenants and cottiers attached to the manor; the tenants from the produce of their little farms; and the cottiers from that of their cows and crofts, except while working upon the demesne, when they were generally fed by the landlord. The mechanics of each village, not having time to cultivate a sufficient quantity of land to yield them a maintenance, received annually a fixed allowance of agricultural produce from each tenant. When the population increased, and a new couple required accommodation, a cottage or a farmhouse, according to the circumstances of the parties, was built, and a proportionate allotment abstracted from the common. Every married peasant thus occupied some portion of land. These peasants, it is true, worked hard and fared scantily enough, but still they were never in absolute want of food. The whole body was poor, but it contained no paupers.
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> In the course of the fifteenth century the demand for wool, to supply not only the markets of the Netherlands, but also the infant manufactures of our own country, rapidly increased. This circumstance brought about an important change in the distribution of the population; the owners of land, finding sheep-feeding more profitable than husbandry, commenced the same system which we have all witnessed in full operation in the Highlands of Scotland. The people who were previously employed in tillage, were turned adrift upon the world; the allotments of land which had afforded them and their families the means of subsistance were enclosed, consolidated, and converted into sheep-walks; and the policy of Henry VII. greatly accelerated a social revolution, which had commenced before his accession.

The misery and suffering which this change of system inflicted upon the ejected peasantry have been depicted in beautiful and glowing language by Sir Thomas More, in his *Utopia*:—

> Your sheep, that were wont to be so meek and tame, and so small eaters, now become so great devourers, and so wild, that they eat up and swallow down the very men themselves. They consume, destroy, and devour, whole fields, houses, and cities; for look in what part of the realm doth grow the finest, and therefore dearest wool, there noblemen and gentlemen, yea, and certain abbots, holy men, God wot, not contenting themselves with the yearly revenues and profits that were wont to grow to their forefathers and predecessors of their lands, nor being content that they live in rest and pleasure—nothing profiting, yea, much annoying the weal publick—leave no ground for tillage; they inclose all into pastures, they throw down houses, they pluck down towns, and leave nothing standing but only the church, to be made a sheep-house. And, as though you lost no small quantity of ground by forests, chases, lands, and parks, these good holy men turn all dwelling places, and all glebe lands, into desolation and wilderness.
>
> Therefore, that one covetous and unsatiable cormorant, and very plague of his native country, may compass about and enclose many thousand acres of ground together, within one pale or hedge, the husbandmen be thrust out of their own, or else either by coven and fraud, or by violent oppression, they be put beside it, or by wrongs and injuries they be so wearied that they be compelled to sell all; by one means, therefore, or other, either by hook or by crook, they must needs depart away, poor, silly, wretched souls, men, women, husbands, wives, fatherless children, widows, woful mothers with their young babes, and their whole household, small in substance and much in number, as husbandry requireth many hands.
>
> Cast out these pernicious abominations, make a law that they which have plucked down farms and towns of husbandry shall re-edify them, or else yield and surrender the possession thereof to such as will go to the cost of building them anew.

Such is the language of Sir Thomas More, which is sufficient to show not only the misery inflicted on the people by the selfishness and narrow-mindedness of the then landholders, but it also shows that thus depriving the people of their vested rights, driving them from that soil which they had occupied from the earliest period, was even then considered nothing less than wholesale robbery. A very considerable number of these discarded occupiers, either unable to find a small spot of land to rent or occupy, or unwilling to submit to the confinement of towns and manufactories, became wandering beggars, infesting the roads and villages of the country. Hence the English poor laws.

I think I have said enough to show that before the people were deprived of their interest in the soil there was no pauperism, nor were poor laws wanted. This system of spoliation has continued ever since, though in another form—viz., the enlargement of farms, which still goes on, with the poor-rates daily increasing. I have before me at this moment statistics from a large number of parishes in the purely agricultural districts of this country, all of which show that the poor-rates have increased only in proportion as the peasantry have been ejected from their direct interest in the soil. It is only in the districts where mines have been worked that the evil has been mitigated. Can they suppose so much spoliation can be carried on for so many centuries, and not engender hatred in the minds of the poor? If so, they are quite mistaken. That this has also been the main cause of the increase of crime, let me endeavour to prove, again quoting from the *Quarterly Review*:—

> In agricultural districts the increase of crime has regularly kept pace with the enlargement of farms and the reduction of the number of cottagers having allotments of land attached to them. As the crofts and cows of the agricultural labourer have disappeared, gaols, houses of correction, and penitentiaries have been multiplied, enlarged, and filled to overflowing; and the once peaceable, contented, and happy inhabitant of an agricultural cottage has been converted into the demoralised and ferocious inmate of a prison or a workhouse.

A powerful writer, John Denson, speaking of this subject, says:—

> This is a system that has been going on until the land belonging to whole villages has got into the hands of two or three individuals, a portion of which land, either great or small, was in the possession of almost every inhabitant.

Taking this in connection with the low rate of wages paid to the agricultural labourer, he goes on to say:—

> It is not to me matter of surprise that our goals are crowded, for until the moral causes—the political causes—are removed, the clergy may preach, statesmen may declaim, the puritans may inundate every village with religious tracts, it will be but useless kicking against the pricks. Notwithstanding all this exertion, shall our county gaolers have much employment, and our hulks be well manned. * * * The man that, under such circumstances, pretends to be surprised at the increase of poor-rates, of crime, or of disaffection, must be either a fool, a knave, or a hypocrite.

This is strong language, but no less true. Since the period when it was first written, the condition of the people in the districts where mines have been worked has been ameliorated to a considerable extent. But what has been the cause of that amelioration? Why, the mines working. While, however, the evil goes on continually to increase in the purely agricultural districts, it exists even in the mining districts. The mines, it is true, employ all the discarded farm labourers who can be made any use of in them, but there are always a large number of these people who cannot be made much use of in mines; these must work for what they can get, when they can get it, and when they cannot, of course, they must go to the parish for relief. This class of people, who really should be employed in agriculture, get in many places a large proportion of the parish funds; this should not be set down to the account of the miners. I very much fear that, should a farm labourer be employed in any mine for one day, and after that come to the parish for relief, he is set down as a miner for ever after.

Having sufficiently proved that the alarming increase of pauperism, poor-rates, and crime, has been caused entirely by the measures adopted by the landholders themselves, I will endeavour to show that they have the remedy in their own hands. Here I will ask by what right one-third part of the land in this country is held and kept in waste, without being made any use of, just as if there were not sufficient people to enclose and cultivate it? This plainly points out the remedy. Let the people have a right to enclose three or four acres each of any land that is not made use of, and occupy the same in perpetuity, by paying a fair rent to the present owner, which, as one-third of the land in the country is now actually bringing in nothing, might be very small; and in districts where everything has been enclosed and incorporated into large farms, let every working man who is willing to cultivate it occupy an acre or two of land, at the same rate as paid by the farmer. This plan would cost the landholders absolutely nothing, and there is abundant evidence to show that it would, next to granting mine setts on liberal terms, be an effectual means of putting an end to the greatest part of pauperism and poor-rates. This plan has been adopted by some few, and never known to fail. I have before me a list of honourable names of noblemen and gentlemen, from different parts of the country, who have carried out this plan on their estates, and it has always been attended with a diminution of poor-rates. There are also some few parishes where similar means have been adopted by the farmers, with in every instance the same happy result. I believe enough has been said to call attention to this mode, the only certain one of improving the condition of the labouring poor, and preventing excessive poor-rates.

Upon the owners of the soil really will fall the pressure of the poor-rates; and the means of remedying the evil rests in their own hands. The application of this remedy is their interest as well as duty. It is their duty towards the labouring classes to let them, for a fair rent, a sufficient quantity of land to employ their unoccupied and leisure time. This is a natural and unavoidable condition attached to the appropriation of land. It is also their interest, for if they neglect the discharge of this duty—the fulfilment of this condition—a punishment falls upon them from which there can be no escape: they will be compelled to support in idleness, out of the portion of the produce of the soil which falls to their share as owners, those able-bodied labourers who, if permitted to do so, would by industry raise for themselves a frugal subsistance.

Having shown what is the duty of the landed proprietors, I will proceed to the policy of their observing that duty, in connection with the interests of their country. The late war in which we have been engaged shows plainly that we have not too many men to fight our battles; and notwithstanding all the preaching and prophesying of the present day, we believe wars will come, and battles will have to be fought, while there are barbarous nations, or barbarous people in those nations pretending to high civilisation.

The change which took place in the rural economy of Italy, subsequently to the age of the republic, was one powerful cause of the decline and fall of the Roman empire. The soil had ceased to be parcelled out in fragments among a numerous host of frugal cultivators, knit to the prosperity of their country by the strong ties of interest and affection. The contracted farms of the early Romans had been gradually consolidated; the ownership of the soil had fallen into a few hands, and the cultivation of it devolved upon slaves. The original basis on which the magnificent fabric of her power was reared being thus destroyed, no wonder that Rome herself,

> "With heaviest sound, a giant statue, fell."

It became necessary to entrust the defence of the empire to an army not composed, as in ancient times, of a body of voluntary recruits, drawn from the class of cultivators, and bound to the territory by love as well as interest, but to a host of foreign mercenaries, ready to sell their services to the best bidder. Italy no longer contained a reserve of hardy husbandmen—citizens willing, if necessary, to hazard their lives in defending the produce of the fields which they had tilled. As soon, therefore, as the hireling legions were routed, her fair fields lay open and defenceless before the invaders, who had only to march to the spoil and take possession. Wherever the same causes are brought into operation, neither experience nor philosophy will warrant us in anticipating a different result. The changes which have taken place, and are still in progress, in this country, if not checked and counteracted in time, may lead to a similar crisis.

As a nation, we should always endeavour to keep up a sufficiently large rural population from whence to recruit our armies. Who more hardy, or better calculated to endure all the hardships of a soldier's life? But, again, if all the lands and wastes in this country were properly cultivated, we might always raise sufficient food for the people at home, thereby being independent of foreign markets, and saving all the gold sent away every year to pay for corn in foreign countries. Is that really not worth consideration?

Having, I think, sufficiently shown that there are other potent causes at work constantly increasing the poor-rates, I might proceed to bring forward abundant evidence to prove that the working of mines has quite an opposite tendency; as this, however, was sufficiently shown last year, and as Mr. Crouch, at the Truro meeting, by facts and figures, proved this to be the case, even in the parish of St. Cleer, the very centre of rating parsons and discontented guardians, I think this ground need not, for the present, be again trodden over. But the enemies of mining are going

forth to the world, endeavouring to make it appear that mining is the greatest curse to the country, in every shape and form that could possibly be imagined; while the truth is that mining, taken in its broadest sense, is an interest to England, in commercial importance, paramount to all others—a vital principle, without which we could not possibly maintain our present proud position among the nations. As it is so important to the country, and profitable to individuals—lords especially—yet, at the same time, a pursuit so uncertain that it requires, in some instances, the most determined energy and perseverance, and in which many men of the highest order are repeatedly baffled, notwithstanding all their struggles and endeavours, I think every encouragement should be held out to those who have sufficient moral courage to engage in it; but the case is far different. It is even now, in some parts of the country, matter of great difficulty for good established companies to get mineral ground worth leasing; whether it is that the lords foolishly imagine that the working of mines are only productive of poor-rates and crime, as some of its enemies have vainly endeavoured to establish—but which I have here traced to another source,—or whether they want to send all the hardy and laborious part of the people out of the country, I know not; but that this last is being done fast enough is a positive fact. Is this wise?

Lostwithiel, April 26. W. TREGAY.

ROYAL CORNWALL POLYTECHNIC SOCIETY.

From the large number of valuable papers which have from time to time appeared in the reports of the Royal Cornwall Polytechnic Society, on mechanical inventions and improvements for facilitating mining operations, and on measures which might be taken for preserving the health of miners, some remarks relative to that excellent institution will not be out of place. This society was founded in 1833, at the suggestion of Miss Fox, daughter of Mr. R. Were Fox, of Falmouth, and has the honourable distinction of being the first of its kind in this kingdom.

Premiums and prizes are annually offered, and competition is not confined to members or to residents of Cornwall; the society, in all cases reserves the power of rewarding each communication in proportion to its merit, or even of withholding the premium altogether. Four premiums of 50*l.*, 25*l.*, 10*l.*, and 5*l.*, respectively, are offered, in the hope of directing attention to the importance of improving the ventilation of Cornish mines. The larger portion of this fund will be distributed with the view to encourage practical ventilation, rather than the discovery of new methods of effecting it. A premium of 20*l.*, by the Editor of the *Mining Journal*, and by the society, to the originator of improvements in the dressing of ore, such improvements to have been in operation not less than six months, or for the most accurate account of the quantity of water found at different depths of the mines of the county, with a view to ascertain whether the quantity of water increases with the depth or otherwise. A premium of 5*l.*, by the Editor of the *Mining Journal*, for the best paper containing an account of any method or plans practised in any other mining districts, advantageously applicable to Cornish mines, to be accompanied by the necessary drawings. Premiums of 7*l.* 7*s.*, 5*l.* 5*s.*, and 2*l.* 2*s.*, for the best reports of comparative trials made by competitors of the relative expenses of driving levels in granite or killas, "working large," and of the ordinary height, and of driving others not less than 6 ft. high, and of proportionate width. A premium of 5*l.* for the best essay, showing the progress of improvement in any particular department of Cornish mining during the last half century. A premium of 10*l.* 10*s.* for the best essay on mining education, as applicable to Cornwall. A premium of 5*l.* 5*s.*, by Mr. John Taylor, F.R.S., for the most accurate accounts of the quantity of water supplied to the boilers, the number of bushels of coals consumed, and the duty performed by an engine, for a period of not than less six months. Premiums are also offered for preventing corrosion of steam-boilers, for curing pilchards, for a life-boat, and for not less than 112 lbs. of Cornish flax. Prizes are offered for improvements in mechanical science, and for productions in the fine arts, natural history, statistics, &c. Every information will be readily furnished to intending competitors, on application being made to Mr. A. Gearing, the secretary.

HISTORY OF LAKE SUPERIOR MINING DISTRICTS.—No. IV.

It will be interesting to notice the towns and villages on the southern side of the lake, and at distances of about 1000 miles from Detroit, which is the nearest civilised town to Lake Superior. Following the coast from east to west from the extremity of the Keweenaw Point, we successively arrive at the ports, towns, and villages of Copper, Agate, and Eagle Harbours, Eagle River, Portage, Elm, and Misery Rivers, Ontonagon, Pewabic, and the Point. Copper Harbour is a considerable port, well sheltered from the northern, north-western, and north-easterly winds, which are frequently inconceivably violent, and the entrance is marked by a beacon, which may be seen at night for five or six miles. Opposite the entrance is Fort Wilkins, built in 1844, for the detachment of soldiers for the protection of the Americans against the Indians; it is now abandoned, the Red Men having quitted the country. A small village has been built at the end of the harbour, and the inhabitants have commenced mining operations; its importance being likely to considerably increase in a short time, if the veins discovered in the adjoining districts should prove sufficiently rich to justify active exploration. It enjoys pretty regular communication with Saut Saint Marie during the time navigation can be carried on, or from May to the end of November.

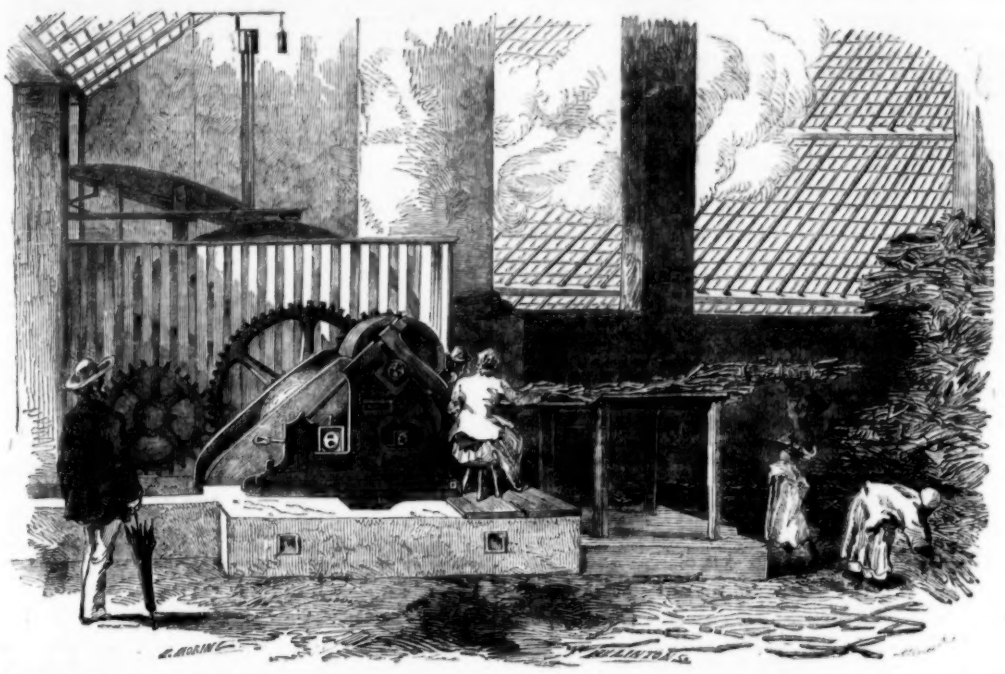
The bay of Agate Harbour might be made a very excellent port; it is easy of entrance, the water is deep to the very edge, and already vessels have availed themselves of it as a refuge during bad weather, and have disembarked their passengers with the greatest facility. The virgin forests extend to the borders of the lake, and the operations have not yet been sufficiently commenced to give important results. The exploration of several veins of copper has been commenced at a short distance from Agate; and if the works are pushed forward with vigour, a town at Agate Harbour will soon become the rival of those at Eagle Harbour and Eagle River. Thus, the only two real harbours on the southern side of the lake—Copper Harbour and Agate Harbour—are, the one scarcely inhabited and the other entirely deserted, although flourishing towns are established at Eagle River and Ontonagon, where vessels are exposed to all the fury of the tempest. Eagle Harbour is small, and badly sheltered from the north winds: a town of some importance, however, already exists, and owes its rapid improvement to the progress which has been made in the development of the mines of the Copper Falls, North-Western, and other companies. The town of Eagle River is on the borders of the lake, at the mouth of Eagle River, contains more than 1000 inhabitants, and daily increases in importance; it serves as a depôt for the richest mines—Cliff and North American. The river is not navigable, and the coast presents no shelter to vessels; the loading and unloading take place at a jetty constructed for the purpose. On the first appearance of bad weather the vessels have to put to sea and run for Copper Harbour, or the Point, and woe to those who do not remove themselves briskly; they are thrown upon the shore, and there extreme difficulty in getting them afloat again. The jetty is very often destroyed by the waves, and there is great irregularity in the communications between this port and Saut Saint Marie at the commencement and end of the season. The mines cannot reckon on arrivals, or on being able to ship their produce except during the months of June, July, Aug., and Sept., which, although unfavourable, is recompensed by the extreme richness of the vein explored by the Cliff and North American Companies.

The town of Ontonagon, built at the mouth of the river of the same name is the most important of all on the lake, the number of inhabitants reaching 15,000, and several of the houses presenting a degree of comfort very rare in countries which have not long been civilised. The river is navigable for flat boats for about 25 miles south of the town, but the navigation is dangerous from several rapids which occur; at the mouth of the river is a sand bank, which prevent vessels of a large tonnage from entering the river. The loading and unloading is carried on as at Eagle River, by a jetty, which projects upwards of 200 yards into the lake. The importance of the town is derived from mining operations, and from the railway in course of construction.

Mr. Rivot then enters very fully into the geological formations of the district, and the manner in which the copper and silver is deposited, and gives a detailed account of the mines and the mode of working, which will form the subject of a series of notices at a future period.

*** TAPPING'S PRIZE ESSAY ON THE COST-BOOK SYSTEM, enlarged and augmented, with Notes and an Appendix, can be had at the MINING JOURNAL office, 26, Fleet-street,—Price 5*s.*

MESSRS. DE MORNAY'S PATENT SUGAR MILL.



In the *Mining Journal* of April 19 an account is given of some experiments at the Crystal Palace, with Messrs. De Mornay's patent Sugar-cane Crushing-mill, the results of which fully established the superiority over the old mill, claimed for it by the inventors. Our illustration presents the mill at work on the estate of Carauna, in the province of Pernambuco, where the first of these mills was set up in 1851, by Dr. Domingos de Louza de Leao, an enlightened and much-respected member of the General Legislative Assembly of Brazil. Several others have since been put up in the same province, which have proved quite successful; and during the last two years, others of the same description have been erected on several sugar estates in the West Indies, the proprietors of which had been made acquainted with the results of the experiments in Brazil. These were—the crushing of a larger quantity of canes in a given time, and the expression of a greater amount of juice from a given quantity of canes than could be effected by the old three-roller mill, results which were confirmed by the experiments at the Crystal Palace, where, as stated in the former notice, the refuse of the canes left the mill free from the smallest appreciable amount of juice, while both the crushing and resisting powers of the mill were tested in the most satisfactory manner. The general introduction of these mills into British Guiana and the West Indies would obviate, in a great measure, the evils arising from deficiency of labour, for the production of a larger quantity of sugar from the lands now under cultivation would be a greater benefit to the planter than obtaining a corresponding increase by extending the area planted, because, in the former case, the increase would be obtained without the employment of additional capital. With the present backward tendency of West India sugar production, this is a point worthy of consideration.

LOSS OF SILVER IN ROASTING SILVER ORES.

An interesting paper, on the causes of the serious loss of silver which occasionally takes place during the roasting of silver ores, by Professor Plattner, is published in the *Berg-und Hüttenmänniache Zeitung*, of which we make the following abstract.

In addition to the mechanical loss of silver through the formation of flue-dust, there also occurs a loss of direct volatilisation, varying, according to the properties of the ore, from 1 to 10 per cent.; in argentiferous blende it amounts to much more. To discover the reason that in ores containing an equal per centage of silver, but of different qualities and composition, the loss per cent. of silver differs when they are roasted, many experiments were made, on a small scale, by the author. Various substances, for the most part free from silver, were reduced to a fine powder, and mixed with others rich in silver, and also in fine powder, in such proportion that the mixture should contain from 1 to 2 per cent. of silver; these were exposed to the action of heat and atmospheric air in capsules of clay. A muffle was used, heated to dull redness, and with most of its openings closed, so as to allow of a very moderate circulation of air within it. The heat was gradually raised to the temperature at which sulphate of copper is slowly decomposed. The substances used to mix with those rich in silver were pyrites, blende, various anhydrous metallic sulphates and metallic oxides, and finely powdered quartz; those rich in silver were sulphuret of silver, light and dark rothgiltigerz (pyrargyrite and proustite), metallic silver, sulphate, arseniate and antimoniate of silver, all in fine powder. These substances were roasted from $\frac{3}{4}$ to $1\frac{1}{2}$ hour, and assayed for silver in the usual way; an equal amount of the unroasted ore being assayed with equal quantities of lead, so that the slight loss always occurring from the absorption of silver by the cupel (kapellenzug) would be the same in each case; the loss of silver during roasting was found by weighing the two buttons. These results show that the loss is occasioned chiefly by chemical causes; that a volatilisation of silver appeared to take place when the silver in the ore either passed from sulphuret into metal, or when the oxide of silver in combination with sulphuric acid again suffered decomposition—the loss being greatest in light, loose substances, not disposed to vitrify, and which were readily penetrated by the atmospheric air; that the loss was greater when the roasting was protracted, and at the same time the temperature increased, or when magnetic oxide of iron, or suboxide of copper, exercised a reducing action on sulphate of silver; and that generally the loss was greater when the silver, existing as sulphate, was exposed to a protracted roasting at high temperature, with free metallic oxides, than when it was present as arseniate or antimoniate of silver—the sulphate being decomposed and reduced to metallic silver before either of the other salts, and more particularly before the arseniate, although their behaviour at high temperatures is not precisely the same, the antimoniate being more rapidly decomposed than the other salts. In order to discover the condition in which the silver was volatized, the following experiments were made:—Three grains of silver in a minute state of division were carefully mixed in a glass mortar, with an equal volume of finely powdered quartz, this mixture was introduced into a glass tube, $\frac{1}{2}$ in. wide and about 20 in. long, of difficultly fusible glass. And after that part of the tube which contained the mixture had been enveloped with platinum foil, in order to ensure a more uniform application of the heat, it was raised by means of a spirit-lamp to a moderate red heat, while from a gasometer a current of dry hydrogen gas was passed slowly over it. Although this experiment was prolonged for upwards of an hour, not the slightest appearance of volatilisation of the silver could be perceived. Another experiment, conducted in the same manner, with carbonic oxide, gave a like result. But when a similar mixture was treated with oxygen gas, there quickly appeared near the mixture, towards the open end of the tube, a slight, dull, grayish-white coating, which gradually extended about an inch along the tube; that portion of the coating nearest to the mixture being afterwards converted into a shining, annular, metallic crust. A portion of the sublimate being removed, and rubbed in an agate mortar, was found to be metallic silver, and this was confirmed by testing in the wet way. The part of the glass tube where the mixture had rested was found to be stained of a light to a dark yellow by oxide of silver. Lastly, a mixture of finely divided silver and ignited oxide of zinc, treated in the same manner with oxygen gas, gave in general the same results; the metallic coating, however, was not quite so striking; yet the tube was found to be coloured yellow by oxide of silver where the mixture had rested.

From these experiments, it appears that that portion of the silver which in addition to that carried off as flue-dust, escapes during an oxidising roasting is removed, not in the metallic state, but at about a low red heat, as oxide of silver, which afterwards, at a low temperature, and in its free state, is again reduced to metallic silver; but as it is then in extremely minute division, it becomes mixed with the gaseous products of the combustion of fuel—the gases and vapours resulting from the oxidation of the ores being readily carried off.

*** PARIS EXHIBITION.—As soon as it can possibly be procured, we shall publish the GOVERNMENT REPORT ON MINING AND METALLURGY, in a SUPPLEMENTAL SHEET.

IMPROVED TRAVERSING MACHINERY.—We have had an opportunity, during the week, of inspecting a model and drawings of a new apparatus, the invention of Mr. W. H. Brown, an American engineer, applicable to naval constructions, such as bridges, docks, piers in coffer-dams, &c., and designed to facilitate the transportation of heavy weights connected therewith, and the landing of men and munitions of war; it consists of a carriage with three grooved wheels in a horizontal line, the centre one being the largest, traversing a cable stretched over the points between which the transportation is to be effected. A pair of three-sheaved blocks, termed by the inventor "automatic purchase blocks," are attached to, and hung below the carriage, by which the weight is suspended, and carried below the cable by suitable tackle. By this apparatus the operation of building the piers of a bridge can be effected without intermediate rafting or scaffolding, and the heaviest weights can be secured, transported, and deposited at any intermediate point, and again taken up, if necessary, for re-adjustment. The cable is suspended from towers on each side of the river, with its ends secured by screw piles or anchors, and forming a fixed track, on which the carriage passes or repasses in its work of transportation. The carriage is brought over its intended burden, and secured from rolling down the incline of the cable by suitable guy tackles, fixed at either end. The weight is attached to the lower moveable blocks, and by means of a purchase fall it is elevated until the purchase blocks couple, when they are held *in situ* by two suspended levers, attached to the sides of the fixed block, and held in a close position by a spring. As the moveable block rises the upper ends of the suspenders strike two corresponding hooks, and are opened until their slots pass the hooks, when the spring causes them to close, and the burden is safely suspended. The purchase fall is now relieved of all strain, the weight being entirely sustained by the suspenders. By slackening the guy tackle, the carriage and its burden will move by their own gravity down the incline of the cable, and may be further transported by hauling on the opposite guy tackle. Arrived at its destination, the carriage is secured by fastening the guy tackle, the purchase blocks are uncoupled, and the weight lowered by slackening the purchase fall. When it is required to transport unusually heavy weights, more than one suspension cable may be employed, and their strength so combined that they may equally support the weight, a carriage being connected with each, and all jointly bearing the burden. In landing troops and stores, the greatest danger is incurred in encountering and passing through the surf, and this apparatus may be employed for the purpose by fixing one end of the cable on the mast head, and the other on a tripod erected on the beach. The expense of this apparatus is comparatively small, and as the cable is stowed on reels, and all the rigging and trucks are portable, the whole is easily and conveniently transported. Work may be done with it which could not otherwise be performed, and a larger amount of work can be done with less machinery, fewer men, and in less time. It is unnecessary to describe the manner in which it may be used in a dockyard, and its utility in saving life and property from shipwrecked vessels will at once suggest itself. In this latter instance, in conveying persons ashore, the platform used for the purpose may be lowered at any intermediate point to rescue those who may be struggling in the water. The little model, which weighs only 5 ounces, will transport a weight of 75 lbs. with great rapidity over a span of 81 feet, and can be made to deposit and take it up at any point in the whole span.

MANUFACTURE OF STEEL.—In our Journal of March 29, we noticed the invention of a process for manufacturing cheap steel, by Capt. Franz Uchatius, of Vienna; and we are now in a position to publish more ample details relative thereto. The inventor takes pig-iron of the purest quality, and melts it in a suitable furnace, and while in a molten state runs the metal into cold water, and thereby reduces it to granulated iron. It is now in a suitable condition to undergo the process which will convert it into cast-steel. This process is founded on the well-known fact that cast-iron, enwrapped or surrounded by any oxygenised materials, and subjected to a cementing heat for a given time, will yield up a portion of its carbon, which will combine with the oxygen driven off from the surrounding materials, and form carbonic oxide or carbonic acid gas. If this process be interrupted before the completion of the process, a partially decarbonised iron will result, the surface of which will have been converted into a pure iron, while the interior parts remain unchanged; or, in other words, the progress of the decarbonising action will depend on the amount of metallic surface brought into contact with the oxygen-yielding material with which the iron is surrounded. In order, therefore, to expedite this operation, the pig-iron is reduced, as before mentioned, to a granulated state; and further, to economise fuel and labour, advantage is taken of the heat required for effecting the decarbonisation of the iron, to reduce the metal, when sufficiently decarbonised, to a molten state, and thus, by one and the same heating, to convert it into cast-steel, which only needs to be forged to prepare it for the market. The granulated iron is mixed with (say) 20 per cent. of roasted pulverised sparry iron ore, and 4 per cent. of fire-clay, but not confined to these proportions; and these substances are placed in fire-clay crucibles, and subjected to heat in a cast-steel blast-furnace of an ordinary construction. By thus subjecting the granules of iron, in presence of the sparry iron ore, to a melting heat, the enwrapping oxides will first effect a partial decarbonisation of the granulated iron, which decarbonisation will be limited in amount according to the size of the granules operated upon, and by reason of the continued application of heat, the iron will melt and separate (with the assistance of the melting residues of sparry iron ore) from the impurities with which it was mixed, and also bring down with it a portion of the iron contained in the sparry iron ore, thereby increasing the yield of cast-steel by about 6 per cent. The manipulations of melting and casting are the same as those commonly employed by cast-steel manufacturers. The quality of the steel is capable of being by this process considerably modified. Thus, the finer the pig-iron is granulated, the softer will be the steel made therefrom. The softer sorts of welding cast-steel may be obtained by an addition of good wrought-iron in small pieces, and the harder qualities by adding charcoal in various proportions to the before-mentioned

mixture. The novelty of the invention consists in the conversion of pig-iron into steel, by subjecting it, when reduced to a granulated state, in crucibles, to the combined action of oxygen, heat, and fluxes, thus obtaining cast-steel of a determinate quality at one melting.

LLANDDEWYBREFI UNITED SILVER-LEAD MINING COMPANY, CARDIGANSHIRE.

To be formed with "Limited Liability."

OFFICES,—11, OLD JEWRY CHAMBERS, OLD JEWRY.

The promoters of this company, having obtained a grant of mineral land of great value in Cardiganshire, on favourable terms, proceeded to develop it, with the aid of Mr. Henwood (of Leeds) and Capt. Rowe (of Laxey, Isle of Man), two mining engineers of great experience.

They have discovered, and intend to work, five distinct mines, within a short distance of each other, each presenting features of unusual richness, and containing lead and silver ore of fine quality. There has recently also been discovered in one of the workings a vein of copper, improving in value daily, and to which much importance is attached. There are lead and copper ores at present ready for dressing, and the returns are expected to be regular and increasing. The position of the workings enables the mines to be developed without the aid of steam machinery, by ordinary water-power apparatus.

The capital will consist of 6000 shares of £10 each, of which £2 will be paid on allotment; £2 in three months after allotment; and £2 in January, 1857; and the remainder at intervals of not less than three months; but it is confidently anticipated by the promoters that no more than £6 per share, if so much, will be required.

It may be mentioned that the sett contains other points possessing unusually attractive features to the company, when it may be thought desirable to work them.

A considerable number of the shares have already been subscribed for; and applications for the remainder may be made to the secretary, at the offices; or Messrs. COODE, KINGDONS, and COTTON, 10, King's Arms-yard, solicitors to the company, from whom every information, with prospectus, may be obtained post free.

GREAT WHEAL NEPTUNE COPPER MINE, MARAZION, CORNWALL.

Capital, £15,000, in 6000 shares, of £2 10s. each.—Deposit, or first payment, £1 per share.

Application for shares to be forwarded to the treasurer or secretary (pro tem.) within 21 days from the date hereof, in the form annexed.

Committee of management and agents to be chosen by the shareholders, and the mine to be conducted under the most approved mining rules and regulations.

BANKERS—Bank of London.

TREASURER (pro tem.)—Mr. W. P. Paull, solicitor, Plymouth.

SECRETARY (pro tem.)—Mr. E. S. Codd, 76, Cornhill, London.

This mine is situate in the parish of Perran Uthnoe, and comprises a very extensive sett, which is upwards of a mile in length on the course of several lodes, and has been granted to the promoters by the lords over whose lands it extends, at 1-18th dues, or royalty, for terms of 21 years, and upon the usual conditions.

The following facts are deemed ample evidence that the mine is of great value, and one from which extraordinary results may be reasonably expected; and it is offered to the public in order that it may forthwith be set again at work.

About the year 1810, the principal lode in the mine was discovered by an adit commenced from the cliff; and in less than 12 months afterwards, with an outlay of only about £2000, it paid large profits out of the ore raised from this lode only—a remarkable circumstance in mining.

During the time the mine worked, a period of somewhat about 10 years, the returns of ore from the before-mentioned lode amounted to from £350,000 to £400,000, out of which the adventurers received large dividends, notwithstanding the standard of copper was only about two-thirds of what it is at present, and has been for some time past,—and the dues were then double what they now are.

The mine was suspended, or partially so, in or about 1820, in consequence of disputes between the shareholders and one of the then lords (whose successor has shown his desire to encourage the adventure by granting mining rights in his lands), which ended in a Chancery suit, and eventually cause the mine to be abandoned; and it has since remained idle on account of difficulties in procuring the grants.

The ore returned from this mine was of the very richest quality, and had that peculiar character for ductility in the metal it produced, which makes ores of that nature so much needed and sought after by smelters, by reason of the disproportion of ores of an opposite kind.

The adit and several shafts have already been cleared up, and are now fit for immediate operations; and what has been done towards opening and developing the mine, with a view to resuming the working of it, would take at least three years to accomplish, and an outlay of several thousand pounds.

The company will have the benefit of all which has been done in the mine, together with the grants and steam-engine, and materials sufficient to commence working, for £2500.

The promoters estimate that in a very short time, with a comparatively trifling outlay, and good management, the mine may be brought into a state of productiveness, as a considerable quantity of ore ground remains to be taken away on tribute, as soon as the water is pumped out.

It may be added that this mine adjoins Wheal Charlotte, a well-known dividend mine, in which very valuable discoveries have recently been made; also, that it is only about two miles from the shipping port of St. Michael's Mount, which will make the carriage of ore very trifling.—Dated, April 29, 1856.

FORM OF APPICATION FOR SHARES.

To the Promoters of the Great Wheal Neptune Copper Mining Company.

GENTLEMEN,—I hereby request you to allot to me shares in this adventure, which, or any less number that may be allotted to me, I hereby agree to accept; and I also agree, immediately thereupon, to pay the deposit, or first payment, of £1 per shares to the bankers or treasurer of the company; and to conform to, and be bound by, the rules and regulations of the company; and to subscribe thereto, if required.

Dated the day of 1856, Name in full.....
Address .....
Profession or occupation .....

GARDETTE GOLD, SILVER, LEAD, COPPER, AND COBALT MINE, IN THE DEPARTMENT OF ISERE, FRANCE.

It has long been known to mineralogists and geologists, and is now admitted to be an established fact, that the mineral deposits in the Alpine mountains of France are inferior to none in the world.

The mountain of the Gardette is situated above the hamlet of that name, in the commune of Villard Eymont. It rises 1290 metres above the level of the sea, and 550 above the Bourg d'Oisans: it is, at its base, perpendicular for more than 2000 metres.

The mine was first discovered and worked at the commencement of the last century, by the mountaineers, who abandoned it for want of means, both pecuniary and intellectual.

In 1765, the inhabitants of the hamlet of Gardette made research: their operations were confined to one opening, only 11 metres deep, in which they found indications of gold.

In 1775, a man named Laurent Garden examined the mine, and, after several days' labour, found in the matrix of the lodes several specimens of gold, perfectly characterised, which were carried to the foundry of Allimont to M. Binelli, who was then its director. They were left with him, and he discovered the presence of gold.

From what had been seen of the mine, it was considered of extraordinary value, and was comprised in the Arrondissement of Mines conceded to M. M. Stanislas, Count de Provence (brother of Louis XVI.), by an order of the Council of State of the 10th January, 1776, and registered at Grenoble the 30th July of the same year.

It was not until 1779 that the existence of gold in the mine was clearly proved, Laurent Garden having then a second time carried some specimens to Allimont. M. Schreiber, the new director, made an analysis himself, and also visited the spot, when he was struck with the analogy which existed between the matrix of the lode and that of the specimens which had been sent to him by Garden. He collected himself some native gold, and a mixture of lead, copper, zinc, and silver, which, upon analysis, gave again indications of gold.

Upon the report of M. Schreiber, M. M. le Count de Provence ordered the mountain to be examined, and the work was commenced in 1781 by opening the stopes to get up to the mine, and they were actively employed both at surface and underground until 1788. The works were then suspended after making a large return. M. Schreiber, who was one of the most eminent engineers of the time, directed the operations; and he, believing firmly in the future good that would result from this mine, stated his opinion in a report, which was deposited in the archives of the Administration of Mines.

In 1805, Napoleon I. sent to the Gardette, and instructed M. Hericart de Thury, Divisional Inspector of Mines, and Counsellor of State, to make him a report upon this mine. In his report, he said:—"It is difficult to see a lode carry itself so regular and so well-defined as that of the Gardette. In all the works the lode of the Gardette has been known to be composed of compact quartz. This quartz produces groups very variable. The quartz constitutes the bulk of the lode; but in it is found a great number of different metallic substances, such as sulphate of lead, phosphate of lead, oxide of lead, earthy oxide of lead, grey copper (argentiferous), yellow pyrites of copper, arseniate of copper, green carbonate of copper, spathose iron, sulphate of iron, oxide of iron, oxide of manganese, and many others. These several substances are separate or associated, two, three, four, and even five together; often they contain gold, and sometimes this metal is very apparent. The gold is disseminated through the quartz of the Gardette Mine; it is there in its native state and pure, associated or allied to other substances. The direction of the lode is E.N.E.—W.S.W.; its inclination is 80 degrees; its size varies between 60, 80, 90 centimetres, and above that (equal to about 3 feet English); its length has been proved upon more than 450 metres."

The tenor of the report of M. Hericart de Thury upon the mine was altogether favourable, and it resulted in the immediate renewal of works. But the attention of Napoleon was very soon diverted by graver occupations, that continued to the end of his reign, and the works were again discontinued; but the inhabitants of the hamlet of the Gardette profited annually by its abandonment—they undertook researches during the dead season at their own expense, and often obtained great success.

The attention of Louis XVIII. was called to this ancient enterprise; and he had it examined, in 1817, by M. Bounart, Inspector General of Mines, and his report was confirmatory of that of M. Hericart de Thury.

In 1827, the Administration of Mines ordered the retaking of the Gardette; but it was not till 1830 that a concessionner presented himself; and then Mr. Beaumier, Inspector-General, and Counsellor of State, made upon this demand a report, which was not less favourable than those of his predecessors. An ordnance of the 15th February, 1831, accorded to M. Van der Velt this concession, but he never took possession; and at the end of the session of the Society of May, in 1837, M. Burat wrote a highly favourable report of this mine, recording his opinion of the large benefit that would be derived from it. They then gathered from it a considerable amount of gold; but the construction of buildings necessary for the exploring, the formation of roads, and the clearing up of old works to the point of research, absorbed their limited capital, and the mines were again discontinued.

M. Bounart revisited the mine in 1841, and manifested his great regret that it had been abandoned without the adit level having been driven up to the lode.

The mountaineers still continue their operations, and the success that attends them is evidence that the workings can now be undertaken with advantage; and whether it be in search of gold, of silver, of lead, of copper, or of cobalt, it offers a return for the investment of capital that is very rarely to be met with.

Native gold has been found on 18 different parts of the property, and a very considerable sum has been actually realised from prills found in the gold-bearing quartz.

A most advantageous contract has been entered into, and the works will be resumed under the superintendence of competent agents sent from England, so soon as the arrangements for the formation of a company are completed.

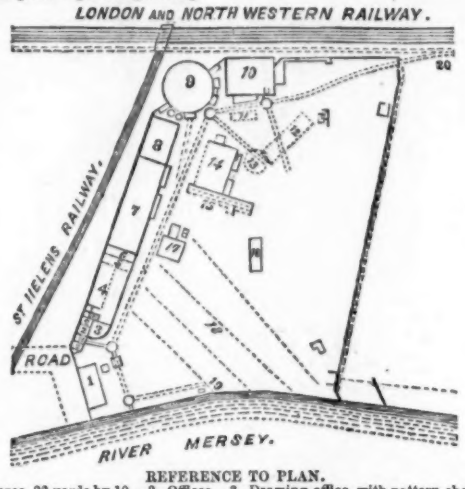
Plans, specimens from the mines, and ample reports, can be seen at the office of KIRKMAN and Co., 4, Coleman-street-buildings, Moorgate-street, London.

WARRINGTON BANK-QUAY FOUNDRY.—TO BE LET,

with immediate possession, for a term of years, if required, that large and convenient SHIPBUILDING and BOILER YARD, together with spacious FOUNDRIES, SMITHIES, GUN MILL, SHEDS, &c., known as the BANK-QUAY FOUNDRY, WARRINGTON.

The premises extend from the London and North-Western Railway (with which there is communication by siding) to the River Mersey, and are furnished with engine-power, wharf crane, and every convenience for carrying on an extensive business in shipbuilding and engineering.

LONDON AND NORTH WESTERN RAILWAY.



REFERENCE TO PLAN.

1. Stores, 22 yards by 10.—2. Offices.—3. Drawing-office, with pattern-shops over.—4. Joiners' shop and shed, 30 yards by 15, with model-rooms over.—5. Sawpits.—6. Stables.—7. Smithy and machine shop, 54 yards by 15.—8. Foundry.—9. Foundry, 28 yards diameter.—10. Gun mill.—11. Gun chipping shed.—12. Travelling crane.—13. Shear legs and tup.—14. Platers' shed and keel smithy.—15. Circular saw mill.—16. Plate shed.—17. Platers' furnace and shed.—18. Ships' ways.—19. Wharf crane.—20. Railway siding.

Apply to Mr. EDWARD TAYLEUR, Vulcan Foundry, near Warrington; or to Mr. SAMUEL HOLME, Benson-street, Liverpool.

THE MINERS' ELECTRO-CHEMICAL REDUCTION COMPANY.

FOR THE REDUCTION AND SEPARATION OF METALS FROM THEIR ORES.
By Her Majesty's Royal Letters Patent.
On the "COST-BOOK SYSTEM."

Capital £30,000, in 10,000 shares of £3 each.—Deposit £1 per share.

COMMITTEE OF MANAGEMENT.

JOSEPH CARRINGTON RIDGWAY, Esq., Richmond-hill—CHAIRMAN.
Sir WILLIAN ROBERT SYDNEY, The Bourne, Maidenhead.
JAMES COOK, Esq., Bow Churchyard.
GERARD DE WHITE, Esq., Stifford Lodge, Essex.
WILLIAM FELL, Esq., Pancras-lane, Bucklersbury.
WESTON PARRY, Esq., New London-street.
J. W. PERKINS, Esq., Poplar-terrace, Poplar—PATENTEE AND CHEMICAL MANAGER.
SOLICITORS—Thomas Lee, Esq., 26, Moorgate-street.
BANKERS—The Bank of London, Threadneedle-street.
MANAGER—John Hamilton Clement, Esq., Gloucester-terrace, Kensington.

OFFICES,—4, UNION COURT, OLD BROAD STREET, LONDON.

This company proposes to work Wagstaffe and Perkins' patent for extracting and separating the various metals from ores by chemical agency.

The company's process gives the metals separately at a small cost; while the sulphur, arsenic, and other valuable properties are preserved for commercial purposes.

With a small outlay of capital for the erection of model works, say £5000, for illustration and reducing English and Foreign ores at a royalty per ton, a large income will be produced. For example, offers, after testing the process, have been made from foreign mines, to consign 1000 tons of copper ore annually, and to pay £5 per ton for reduction, which, after deducting (say) £1000 for expenses, would leave £4000 profit to the company, increasing the value of the metal; also, giving the other properties to the consignee, and about 1000 tons of extra sulphuric acid. Thus giving the shareholders 30 per cent. on their capital, independent of the main and vast revenue which will accrue, without outlay, by granting licences to mining companies for reducing ores at their mines.

A portion of the capital is already subscribed for, and application for shares must be accompanied with the bankers' receipt for the deposit of 10s. per share, and may be addressed to the solicitor or manager, from whom prospectuses may be obtained. [The detailed prospectus appeared in the *Mining Journal* of March 29, April 5 and 19.]

THE MINERS' ELECTRO-CHEMICAL REDUCTION COMPANY.

FOR THE REDUCTION AND SEPARATION OF METALS FROM THEIR ORES.
By Her Majesty's Royal Letters Patent.

OFFICES,—4, UNION COURT, OLD BROAD STREET, LONDON.

Applications from Mine Proprietors, Smelters, and others, for LICENSES TO USE the PATENT PROCESS of this company, may be made to, and terms and particulars obtained from JOHN HAMILTON CLEMENT, Manager.

April 25, 1856.

TREBURGETT CROWAN CONSOLIDATED MINING COMPANY (LIMITED BY ACT OF PARLIAMENT).

SITUATE IN THE PARISH OF CROWAN, THE BEST MINING DISTRICT IN CORNWALL.

Capital £25,000, in 2500 shares of £10 each.—Deposit £6 5s. per share.

The old shares of £1 each in the Treburgett Consols Mine will be received in exchange, and in payment of the deposit of £6 5s. per share.

OFFICES,—9, AUSTINFRIARS.

REPORTS RELATING TO WHEAL CURTIS, WHEAL STRAWBERRY, AND WHEAL DUMPLING (NOW CROWAN CONSOLS), FROM CAPT. JAMES CRASE.

I beg to hand you my report of the above mines:—They are situated in the parish of Crowan, in one of the best copper strata in Cornwal.; the setts are extensive, 1½ mile in length, and ½ mile in breadth, on the course of the lodes. It adjoins and runs parallel to the celebrated Wheal Abraham, Oatfields, and Crenver Mines, from which great profits have been realised. There are six well-defined lodes known to be in the sett. Our workings will for the present be principally confined to four lodes,—namely, Wheal Curtis lode, Wheal Dumpling and Wheal Strawberry lode, Mill lode, and the New lode. Curtis lode is wrought to the depth of 47 fms. below the adit; from this shallow depth about £10,000 worth of copper ore was raised. Wheal Dumpling is sunk 27 fms. below adit, and a level driven east of the shaft about 40 fms., through good tribute ground; I believe the Dumpling will prove a rich mine. The New lode, which intersects the Dumpling and Curtis lodes, is only seen about 4 fms. from surface, where it presents a very fine gossan; I have a very high opinion of this lode, looking at the lodes and the stratum of ground. You can depend on Mr. Hopkins's plan for correctness. The engine-house is in the right place; it will require a 70 in., with two boilers about 12 tons each. Signed, J. CRASE.

REPORT OF CAPT. FLOYD.

The sett is extensive, including Wheal Curtis, Wheal Dumpling, and Wheal Strawberry. It is about 1½ mile in length, and ½ mile in breadth, in the parish of Crowan. It is parallel to the celebrated Wheal Abraham, Crenver, and Oatfields Mines. These mines have produced immense quantities of ore, and have returned large profits. Wheal Curtis, &c., are in the same stratum of mineral ground, and, according to the depth at which the lodes have been wrought, they have been more productive than Wheal Crenver and Wheal Abraham. From Wheal Curtis alone (which has been wrought only to the depth of 47 fms. below the adit level) upwards of £10,000 worth of copper has been returned. The Wheal Dumpling lode, which is 60 fms. south of Wheal Curtis lode, is of a promising character, and is likely to prove quite as productive as the other, if not more so. Altogether, there are six well-defined lodes in the sett. A lode south of Wheal Curtis and Dumpling lodes, and which intersects both, is likely to prove as productive as either of the before-mentioned lodes, when opened on. With the exception of a pit mark on it, a few feet from the surface, nothing has been done on it. There is another lode south of Wheal Curtis, called the Drym lode, which has a promising appearance; it produces a splendid gossan. The stratum of ground in which the mines are situated is well known, as well as the character of the lodes. Allow me to say, no man can speak too highly of this piece of ground; and it is my opinion they will make good dividend-paying mines.

Signed, PETER FLOYD.

REPORT OF CAPT. CHARLES THOMAS, OF DOLCOATH MINES.

I have this day inspected this mining sett; it is situated to the south and south-west of Wheal Abraham, and north of Godolphin, both of which mines, 30 or 40 years since, produced large quantities of copper ores. The stratum here is clay-slate, of the same mineral character as that of Wheal Abraham, being in the same geological formation. Wheal Abraham was found rich to full 200 fms. deep, and I perceive no cause to induce me to think that this mine may not be found productive equally deep. The Wheal Curtis lode, which is nearly parallel to Wheal Abraham, is worked to the 47 fm. level below the adit; the mine is now full of water to the adit, which prevents me examining the lode, but I find the stuff above lying on the surface to be quartz of the same kind as that in the burrows of Wheal Abraham. I have also seen the reports of two highly respectable mining agents, who inspected the mine during the working (1843), from which I gather that the lode down to the bottom of the mine was of good size, and rather increasing in productiveness. The steam-engine at that time was unequal to the work of draining the mine deeper, and the company had not sufficient capital to erect a larger one. After the ore was taken away to that level, so far as would pay for working, the mine was abandoned. Wheal Dumpling lode lies about 60 fms. south of Wheal Curtis lode. This mine is only worked 20 fms. below adit, which is 16 fms. deep. Good bunches of ore were found during the last working, but there is not depth enough for regular courses of ore to be expected. On the whole, I have no hesitation in recommending this mining sett as a legitimate field for conducting mining operations in a vigorous manner. The caunters and the lode are easy to work, and the ores can be cheaply dressed for market; the labour cost, therefore, will not be heavy. A steam-engine of not less than 70 in. diameter will be required, which will probably drain the mine to 130 fms. below adit.

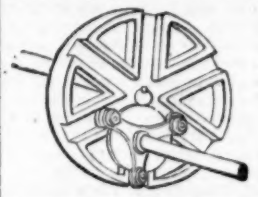
Signed, CHARLES THOMAS.

Prospectuses of this company will shortly be issued, and the company provisionally registered, according to the Act which limits liability to shareholders.—Applications for shares, in the meantime, may be applied for at the company's offices.

TO MARINE ENGINEERS, SCREW SHIP COMPANIES, AND MACHINISTS GENERALLY.

THE NEW PATENT MULTIPLE ROTATIVE GEARING.

This justly admired invention contrasts with the ordinary toothed gearing, for which it is proposed as a substitute, and possesses the pre-eminent advantages of COMPACTNESS, STRENGTH, DURABILITY, FREEDOM FROM NOISE and BACKLASH, UNIFORMITY and SMOOTHNESS of ACTION, REDUCED FRICTION, FACILITY for LUBRICATION and REPAIR, and virtually WITHOUT RISK of ACCIDENT, advantages unequalled in any other arrangement of gearing. It is proposed for all purposes where a change of speed is required, and is peculiarly applicable for screw propulsion.

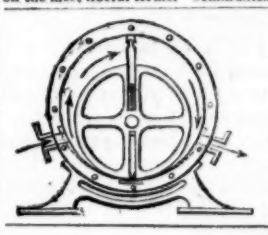


The proprietors of the patent are prepared to GRANT DISTRICT and OTHER LICENSES for the manufacture of this gearing, or to ENTER INTO CONTRACTS for the adaptation of the invention to screw steam-vessels, or other machinery, upon application to their agent, No. 3, Hanover Chambers, Buckingham-street, Adelphi, where any further particulars may be obtained, and models and testimonials inspected.

The invention was honourably mentioned by the International Jury at the French Exhibition of 1855; and has been favourably noticed in the *Artizan* of June and July, 1855, and the *Mining Journal* of 8th December, 1855. Manufacturers treated with on the most liberal terms. Communications by letter post paid.

PARSEY'S LIFT AND FORCE PUMPS.

A VAST IMPROVEMENT.



Being all metal, without valves or packing, are NOT LIABLE TO CHOKE, and are equally SUPERIOR for HOT or COLD LIQUORS, or SHIPS' PUMPS.

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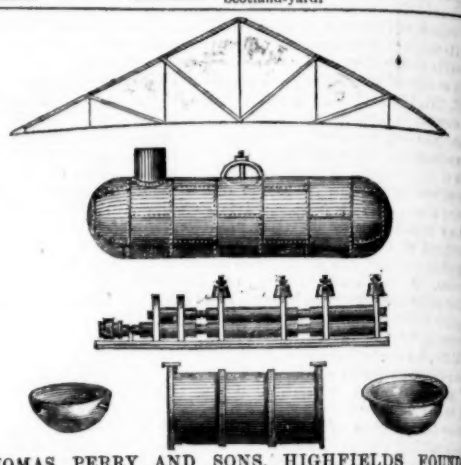

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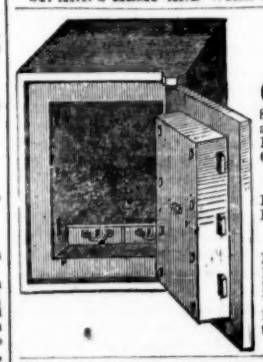

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